Tuberculosis: a biosocial study of admissions to a children's sanatorium (1936-1954) in Stannington, Northumberland, England.

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Abstract

This study considers the biosocial profile of children admitted to the Philipson Children's Sanatorium at Stannington, Morpeth, Northumberland, England (1936-1954). The objective was to understand the differential impact of TB on male and female admission at Stannington, according a number of variables. A total of 1987 medical files were analysed. More females than males were admittede, peaks of admission at age six and 13 were documented, and the majority of children derived from poor urban area. Over 60% (1199, 63.5%) of children had pulmonary TB, and 12% (230) had bone or joint involvement. The implementation of chemotherapy (streptomycin) at Stannington (1946), the end of the 2nd World War (1945), and the founding of the National Health Service (1948) did not have any great effect on the biosocial profile of children admitted to the sanatorium and treated (age, sex, origin, type of TB suffered, and socioeconomic status). Reasons for this finding are discussed.

Keywords

20th century, National Health Service, World Wars, chemotherapy, bone tuberculosis

Introduction

The impact of tuberculosis (TB) on our human population has had a very long history, and remains with us today in both developed and developing countries, including England[1-2]. Although today treatment is very much more advanced and effective for many, in the more distant past care and treatment of people who were victims of this infectious disease were generally poorly developed[3]. They consisted of regimes based on disease concepts at the time. For example, an illness believed to occurr because of an imbalance of the four humours in the Graeco-Roman and later periods, meaning that draining away one of those humours, blood, would likely help. These treatments were used mainly because, firstly, there was a lack of understanding of the nature of the infection and how it was transmitted and, secondly, effective treatment with chemotherapy had to wait until the 1940s and 1950s.

However, one aspect of care that was initiated was placing people with TB in sanatoria. There may have been sanatoria founded earlier than the majority, but the real concept originated in 1840 in England (George Bodington, Sutton Coldfield). Edward Livingston Trudeau was his counterpart in the United States, and founded the sanatorium movement there[4]. Early sanatoria, initially in the 19th century AD, were for admitting people with TB (meaning "to heal", as opposed to "sanatorium" meaning "concerned with health"). Britain, along with other countries across the world opened many sanatoria, usually in rural environments, at high altitude, or next to the sea where the air quality was good. They were institutions where people with TB were admitted for rest, a good diet, fresh air, graduated exercise and treatment, although they were not universally accepted in the battle against TB. Indeed, Evans suggested that 'there is no scientifically acceptable evidence that it reduced the toll of the disease'[5]. However, a more healthy environment, and segregation of patients, must have had some impact on the decline of the infection, and they were certainly the key focus for "treatment" in the late 19th century[5]. Nevertheless, personal experiences suggest that life in a sanatorium was challenging, and because patients were estranged from their families and friends, life could be miserable[6-9]. By the 1950s sanatoria as places for the care of people with TB declined in use because of the development of a vaccine and antibiotics for treatment.

By 1919 there were 97 sanatoria in England plus isolation hospitals and voluntary institutions for TB treatment[10], and by 1935 there were 550 sanatoria and other institutions for segregating and treating people with TB documented in England and Wales by the Ministry of Health;174 were opened specifically for children[10]. In Northumberland, north-east England, two of the four sanatoria operating in the early 20th century were for children with TB: the Philipson Children's Sanatorium at Stannington, and the Sanderson Home for Crippled Children, Gosforth[10]. The focus of this study is on Stannington, lying 12 miles north of Newcastle-upon-Tyne (Figure 1), not far from the coast and in a rural environment. It functioned between 1907 and 1953. It was the first sanatorium opened for children in England[10]. At its maximum development it had 312 beds and catered for children with all types of TB from pulmonary to skeletal. When it closed its doors as a sanatorium in 1953, it continued as a convalescent home for children.

The aims of this study were to consider the biosocial profile of the children admitted to Stannington, and to explore how the following were reflected in those admitted and how they were treated:

- the origin of the children (rural or urban),
- their socio-economic status (rich or poor)
- the pre- and post-antibiotic eras (1937-1943 and 1944-1953)
- the pre- and post-World War II periods
- the implementation of the National Health Service(NHS) in 1948
- the presence of bone and joint TB

The urban or rural nature and socioeconomic status of people admitted was explored because it was hypothesised that poorer urban children would have been more predisposed to TB. It was further hypothesised that the introduction of antibiotics as a treatment at Stanington in 1946 affected the types of TB from which the admitted children suffered, and their length of stay at the sanatorium. It was further suggested that when fathers began returning from WWII, and were likely in an immune-compromised state and more likely to contract TB, they could have become the main TB contact for their children (rather than their mothers). Finally, the numbers and

backgrounds of children admitted to the sanatorium may have changed once the National Health Service had been established. Prior to the NHS there were barriers to access to care and treatment, inadequate quality of care, inefficiency in provision of care (e.g. long waiting lists), and inequality in health care provision (e.g. urban/rural and north-south divides)[11]. Following formation of the NHS, care and treatment was free at the point of use so there was no financial barrier, and it was a comprehensive and equitable service. Interestingly, in spite of the NHS today, many of these problem remain.

The objective of this study was to understand the differential impact of TB on males and females, according to:

- different age groups
- the types of TB suffered
- socioeconomic background

There had been no previous research on the medical records at Stannington.

Material and methods

Ethical approval was acquired from Northumberland Medical Ethics Committee, via Dr Nicol Black, Communicable Disease Control Unit, Newcastle General Hospital. While it is believed that there are almost 8,000 extant medical files for Stannington, due to time restraints, only 1987 files dating from 1936-1954 and archived at the Northumberland Record Office at Morpeth, Northumberland were available for access (c.25% of the potential total); strict anonymity was followed during the research. The following were recorded: age and sex at admission, month of admission, duration of stay, type of TB on admission, origin of the child (rural or urban) via location of addresses on Ordnance Survey maps and correlation with census maps, socioeconomic status, possible contact i.e. origin of the infection (e.g. mother, father, siblings etc.), type of TB treated, and outcome. Some of these data are presented in this paper but, due to space restraints, more detail can be found in Bernard[12]. Data were entered directly into a database using Access 2000 and chi-square analysis was used to test significance between results. Some problems with the archival data were

encountered, including difficulties with reading handwriting, changes in medical terms used over the time period under investigation, and some of the medical files being incomplete[12].

Results

Results showed that more females (1018 or 54%) than males (879 or 46%) were admitted between 1936 and 1954 (Tables 1 and 2), and this was statistically significant (0.001%). Age at admission was between one and 16 years, with six, nine and 13 years being the peaks for male admissions, and 13 years for females (i.e. being the groups with the highest frequency of admissions: > 9%). Most children admitted were from poor urban environments (86.6%, 1642), and specifically nearby Newcastle and Gateshead, just south of Newcastle across the River Tyne, but there were no data for this variable for 97 children (5%). While overall there were peaks of admission at six and 13 years of age, two high peaks of admissions were seen in May and October. There were 596 children (31.4%) where socioeconomic status was available and 82 (13.5%) lived relatively well, while 116 (19.5%) had poorer living conditions. However, the majority of files did not provide information. Over 60% (1199, 63.5%) of children had pulmonary TB, and 12% (230) had bone or joint involvement, the difference being statistically significant at the 0.001% level. The hips joints were most affected (77, or 36.1%), followed by the spine (75, or 30.7%) and the knee joint (42, or 17.2%). The implementation of chemotherapy for treatment at Stannington (1946), the end of the 2nd World War (1945), and the founding of the National Health Service (1948) did not have any great effect on the characteristics of children admitted to the sanatorium and treated (age, sex, home origin i.e. "contact", socioeconomic status and type of TB).

While admissions rose after 1945 (1940-1944 472; 1945-1950: 947), the biosocial profile did not change of those children. Fathers were not cited more as being the GTB contact for their children. The founding of the NHS did not change the number of characteristics of admissions (pre-NHS: 1942-1947: 932; post-NHS: 1948-1953:941). Finally, although admission numbers rose after 1946 (1940-1945:585; 1946-1951:992), when streptomycin had been implemented as a treatment at Stannington, the biosocial profile did not change, and nor did the type of TB treated.

DISCUSSION

Stannington sanatorium was opened by the Newcastle Poor Children's Holiday Association and Rescue Agency in 1907. It catered only for children with TB. Of those admitted to Stannington between 1936 and 1954, there were more females; this correlates with many other studies[13], although rates are higher in males today after the age of 30 years.

Most children admitted were poor urban dwellers; this correlates with TB as being a disease of poverty today. Treatment of those admitted included rest for all, UV light therapy (particularly for TB of the glands and abdomen), fresh air and possibly surgery and immobilisation in later years of its functioning (pulmonary and bone and joint TB). This is consistent with records for other sanatoria[7,9]. In 1946 chemotherapy started to be given as a treatment at Stannington, again consistent with other sanatoria in England and Wales. Admission before and after the founding of the National Health Service did not differ to any great degree, but a comparison of admissions between 1937-1943 and 1944-1953 (pre- and post-antibiotic introduction) differed markedly. It is unclear why the admissions profile did not change pre- and post-WWII and with the founding of the NHS. It might be expected that, with the implementation of the NHS, more people were treated in their communities, rather than being segregated into a sanatorium. However, it seems that the Philipson Sanatoriun at Stannington continued to admit many children with TB in spite of the NHDS and chemotherapy.

Of those suffering TB of the bones and joints, the children were generally younger on admission than those with pulmonary TB; the spine, hip and knee were the sites most affected, as is mainly seen in other studies[14]. The Stannington data (12%) for involvement of the skeleton are generally higher than seen in other clinical contexts; a frequency rate of 3-5% of people with TB developing skeletal TB is suggested overall, although higher frequencies are noted in some studies[15]. The high frequency at Stannington may reflect the fact that it was a sanatorium that catered only for people with TB.

While there were some limitations in the contents of some medical files,it has been possible to use the data overall to build a biosocial profile of Stanningotn's young patients between 1936 and 1954, and to see the effects of different variables on the type of patients admitted.

CONCLUSIONS

This study contributes to understanding the burden of TB for children in early 20th century Northumberland. Unfortunately, there are no comparative data available from any other children's sanatorium of this period for this study to explore whether the admissions were unique to Stannington. The objectives of this study, to understand the differential impact of TB on males and females, according to different age groups, the types of TB suffered, and socioeconomic background, was achieved. While the study came across challenges during its course (illegible writing in records, changes in medical terminology over time, and incompleteness of some files), there is still much work that could be done on these records, including a study of the extant radiographs, currently on microfiche, and a survey of any available records of admissions to children's sanatoria in Europe for comparative purposes.

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FIGURE AND TABLE CAPTIONS

Figure 1: Location map showing Stannington
Table 1: Age at admission for males and females
Table 2: Male and female admissions by calendar year

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Table 1: Admissions to Stannington by age and sex

Population at Stannington (1936-1954)		
Age at last birthday	**Stannington (age at admission)**	
	Male	Female
0	0 (0%)	0 (0%)
1	4 (0.5%)	2 (0.2%)
2	24 (2.7%)	32 (3.1%)
3	70 (8.0%)	58 (5.7%)
4	67 (7.6%)	65 (6.4%)
5	79 (9.0%)	74 (7.3%)
6	84 (9.6%)	83 (8.2%)
7	69 (7.8%)	64 (6.3%)
8	63 (7.2%)	65 (6.4%)
9	62 (7.1%)	63 (6.2%)
10	67 (7.6%)	88 (8.6%)
11	54 (6.1%)	89 (8.7%)
12	65 (7.4%)	87 (8.5%)
13	83 (9.4%)	96 (9.4%)
14	48 (5.5%)	83 (8.2%)
15	24 (2.7%)	45 (4.4%)
16	2 (0.2%)	8 (0.8%)
N/A	14 (1.6%)	16 (1.6%)
Total	879 (46%)	1018 (54%)

Table 2 Admissions to Stannington by year and sex

Total number of records by year					
	Male		**Female**		**Total**
	Number	%	Number	%	
1936	1	100	0	0	1
1937	0	0	2	100	2
1938	2	67	1	33	3
1940[1]	2	50	2	50	4
1941[1]	5	38	8	62	13
1942[1]	23	42	32	58	55
1943[1,2]	83	48	90	52	173
1944[1]	91	40	136	60	227
1945[1]	52	44	65	56	117
1946	104	52	95	48	199
1947	66	41	95	59	161
1948[3]	74	42	104	58	178
1949	76	49	78	51	154
1950	68	49	70	51	138
1951	77	48	85	52	162
1952	81	51	78	49	159
1953[o]	73	49	77	51	150
1954	1	100	0	0	1
Total	879	46	1018	54	1897

[1] indicates the years during the Second World War, [2] indicates the development of streptomycin, the first of effective anti-tuberculosis drugs, implemented in 1946 at Stannington, [3] indicates the implementation of the National Health Service in Britain, and [o] indicates the closing of Stannington as a sanatorium for tuberculous children